Special Issue

Heat Transfer Enhancement Techniques: Passive and Active Methods

Message from the Guest Editors

Enhancing fluid-to-wall or wall-to-fluid heat transfer is a cornerstone of engineering and physics applications. Over the course of five decades, this topic has been an active area of research, since it yields a reduction in the energy required to operate the related heat transfer devices, as well as a reduction in materials and other savings. It is also of great interest in the transition to clean energy. The efficiency of heat transfer devices can be improved by reducing thermal resistance, such as the laminar sublayer where the fluid velocity is low. To achieve this, passive and active methods are employed. Examples of passive methods include: (i) turbulence promotors of different geometry, (ii) corrugated surfaces, and (iii) the suspension of small solid particles with high thermal conductivity. Examples of active methods include: (i) stirring the fluid, (ii) surface vibration, (iii) fluid pulsation, (iv) fluid injection, and (v) fluid suction. The aim of the present Special Issue of *Fluids* is to gather papers dealing with physical mechanisms leading to heat transfer enhancement in both single- and two-phase systems.

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